Radio Shack®
The biggest name in little computers™

MICROCOMPUTER NEWSLETTER

700 One Tandy Center
Fort Worth, Texas 76102

JAN/FEB 1980

PRICES MAY VARY AT INDIVIDUAL STORES AND DEALERS

Fort Worth Scene

We decided to combine the January and February Newsletters in order to "catch up." We simply took the material for the two issues and combined them. This means that your March issue will be mailed nearer the first of the Month.

Disk Payroll users will be happy to hear that current state tax tables are available from Computer Services. Since these tables change frequently, as we receive additional changes in individual state tables we will let you know that they are available.

We wish to remind you that the Microcomputer Newsletter has a "new" permanent section, currently called TRS-80 Product News. This will normally be a four page "pullout" section.

Our intent is to make the Newsletter of "general interest." We have to gauge what you want by what you tell us. Our purpose is to have SOMETHING in each issue for Level I users, Level II non-Disk users, Level II Disk users, and Model II users.

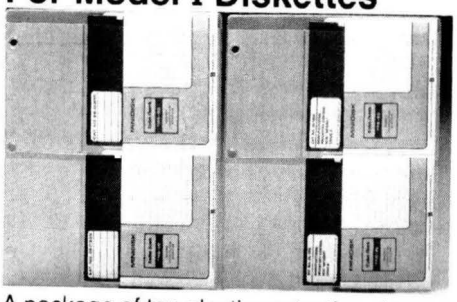
This month we received notice of three new clubs forming:

Computers Anonymous
Box 263
Dalton, Mass. 01226

TRS-80 Users Club
302 Wyoming Ave.
Kingston, Pa. 18700

and NEPACC
P.O. Box 105
Pardeesville, Pa. 18243

Protective Envelopes For Model I Diskettes



A package of ten plastic protective sleeves for Model I diskettes is now available (26-510, $7.95). These sleeves are standard notebook size, three hole punched and hold two diskettes each. Diskettes not included.

MODEL II MAILING LIST AVAILABLE

Mailing List (26-4506, $79.00) is now available for Model II 64K single disk systems.

Radio Shack Announces Word Processing for TRS-80™ Model I

A complete Word Processing system is now available for Radio Shack's TRS-80 Model I computer. Our Disk Word Processor SCRIPSIT™ (26-1563, $99.95) gives you a wide range of word processing features which we think you will find are far better than you can get in any comparably priced package anywhere.

When you combine word processing software with our new Lower Case Modification and a printer you have a truly versatile system which can handle simple letters or complex multipage documents. Our lower case option gives you true lower case descenders and can be used in BASIC as well as with our word processor. Lower case is NOT intended to be used with existing Radio Shack programs, but may be used with programs YOU write. Our printer line is wide enough to give you the right printer for your needs. Our new Daisy Wheel printer gives typewriter quality copies in less time than your secretary can type them!

(Continued on page 2)

AN INTERESTING IDEA

Dr. Michael Zabinski, of Fairfield University, is planning a one week summer camp for TRS-80 enthusiasts aged 10-17. Small group instruction, using TRS-80 computers, will be available for campers with all levels of computer experience. Dr. Zabinski assures us that no experience is needed to benefit from this activity. Summer dates are June 29 to July 4. For further information contact Dr. Zabinski at 203/795-9069 or write:

Computer Camp
Grand View Lodge Box 22
Moodus, Conn. 06469

MOD I DISK AVAILABILITY: DELIVERY NOW 4 WEEKS OR LESS

Disk Drives (26-1160, 26-1161) for Model I Disk systems can now be ordered from your local Radio Shack Store or Dealer for delivery in four weeks or less.

COMPUTER SERVICES ADDRESS AND PHONE NUMBERS

Computer Services
900 Two Tandy Center
Ft. Worth, Texas 76102

Computer Services
Phone Numbers:

1-800-433-1679 (WATS except Texas)
1-800-772-5914 (WATS inside Texas)
1-817-390-3583 (Switchboard)

All TRS-80 related calls and mail should be directed to the above address, or one of the above phone numbers. Computer Services is staffed with knowledgeable people who are there to answer your questions. If they do not have an immediate answer, they have the internal contacts to get the answers in a minimum amount of time. Questions sent to the Newsletter must be sent to Computer Services via internal mail, which delays your response.

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WRITER-RESEARCHER
For Radio Shack
Microcomputer Products

Technical Publications is looking for an experienced writer who'll be able to dig out the facts about new computer hardware and software — and then organize the information for consumer-level reference and operation manuals.

In addition to being a skilled communicator, you should be:

- Experienced with a high-level computer language
- Familiar with an assembly language
- A logical thinker with enough curiosity to ask questions and find the answers
- Able to identify with non-technical readers

This is NOT a programming job. Your primary interest and ability must be in communications. If you fit the description and you'd like to work for The biggest name in little computers™, send resume and writing samples to:

TECHNICAL PUBLICATIONS
TANDY SYSTEMS DESIGN
1000 TWO TANDY CENTER
FORT WORTH, TEXAS 76102

Tension Breaker Simplified

Did you find that Tension Breaker (Aug./Sept. 1979) really did help, but you just don't have time to press the keys? Try Stefan Cernusca's solution:

```
10 CLS
20  PRINTCHR$(23)
30  FORX=15360 TO 16383 STEP
    RND(79)
40  POKE X, RND(94)
50  NEXT X
60  CLS
70  FOR X= 16383 TO 15360 STEP
    -RND(79)
80  POKE X, RND(94)
90  NEXT X
100 GOTO10
```

Word Processing (cont. from p. 1)

Our disk word processor software is in the warehouse for delivery to stores and dealers. The Lower Case Conversion for 16K Level II keyboards (26-1104, $99.00) is available installed by our service facilities and the letter-quality, daisy wheel printer (26-1157, $2960.00) is a special order item (check with your local store for delivery information). Information on all of these items is available from your local Radio Shack Store or Dealer and appears in this issue's TRS-80 Product News.

NOTE — The lower-case modification may not work with some non-Radio Shack programs. It may also not work with early versions of 26-1555 Accounts Receivable and 26-1504 Level II Cassette Payroll. If you have either of these programs and wish to use them in a machine modified for lower-case, new disks or cassettes are available free from Computer Services.

Blinking Cursor for Level II

The following routine was sent in by Greg Whitcomb.

```
5       CLS
10      CLEAR2000
20      PRINT"INPUT YOUR
        NAME";:GOSUB65000
25      PRINT
30      PRINTIN$
40      GOTO20
65000 ' *** BLINKING CURSOR
        SUBROUTINE ***/ GREG
        WHITCOMB — NOV. 1979
65003 IF X<>0 THEN 65010
65005 PRINT CHR$(14);
65006 FOR X=POS(0) TO 1023 STEP
        64
65007 C1=PEEK(X+15360)
65008 IF C1<>95 NEXT
65010 X=X+1
65011 C1=0
65012 IN$=""
65013 BE=X: C=0
65014 PRINTCHR$(15);
65015 C=C+1
65016 IF C<7 PRINT@X,CHR$(143)
        ;ELSE PRINT @X," ";: IF C=14
        C=0
65020 AA$=INKEY$: IF AA$="" THEN
        65015
65021 AS=ASC(AA$): PRINT@X," ";
65022 IF (AS=8 OR AS=24) AND
        X=BE THEN 65015
65023 IF AS>31 THEN 65035
65024 IF AS=8 PRINT@X,AA$;:
        X=X-1: C1= C1-1:
        IN$=LEFT$(IN$,C1): GOTO
        65015
65025 IF AS>9 AND AS<14 X=0:
        RETURN
65026 IF AS=24 FOR CC=X TO BE
        STEP-1
65027 PRINT@CC," ";
65028 NEXT
65029 X=BE
65030 IN$=""
65031 C1=0
65032 GOTO65015
65035 IF X<1022 AND C1<255 PRINT
        @ X, AA$;: X=X+1: C1=C1+1:
        IN$=IN$+AA$
65040 GOTO65015
```

Level I Calculator

Don Taylor of Albany, Oregon, sends us this one line Level I calculator:

```
10 INPUT  A: PRINTA: GOTO10
```

Since Level I BASIC permits the use of expressions when inputing values, you can use parenthesis, variables and arithmetic operators (+, −, *, /). When you INPUT your expression, Level I BASIC will interpret it, and PRINT the answer.

Combined Graphics and Alphanumeric Screen Print Routine for 132-Column Lineprinters

Myron F. Johnson of Pinedale, California sent in this screen print routine which will print intermixed graphic and alphanumeric material to your 132 column lineprinter. The printout will be 128 columns wide and 48 rows long.

```
10000 REM SCREEN PRINT
        SUBROUTINE
10050 REM M.F. JOHNSON STEEL
        STRUCTURES INC. PINEDALE
        CA 12/5/79
10060 K=0
10100 FOR Y=0 TO 47
10200 P$=""
10300 FOR X=0 TO 127
10400 IF POINT (X,Y) THEN
        P$=P$+"+" ELSE
        P$=P$+" "
10500 NEXT X
10600 IF INT ( (Y/3)-.1)=(Y-1)/3
        GOTO 11000 ELSE 10700
10700 LPRINT P$
10800 NEXT Y
10900 K=0:RETURN
10950 END
11000 K=K+1: Q$="":R$=""
11100 FOR L=0 TO 63
11200 A=PEEK (15360 + L + (64*(K-
        1) ) )
11300 IF A<=32 THEN A=32:GOTO
        11500
11400 IF A=>96 THEN A=32
11500 Q$=Q$+CHR$(A)+" "
11600 NEXT L
11700 FOR M=1 TO 127
11800 IF MID$(Q$,M,1)<>" " THEN
        R$=R$+MID$(Q$,M,1) ELSE
        R$=R$+MID$(P$,M,1)
11900 NEXT M
12000 LPRINT R$
12100 GOTO 10800
12200 END
```

For each row in the printout, this routine builds a string (P$) representing graphic points set in that row (lines 10300-10500). Line 10600 allows us to check for alphanumeric characters once every three rows. (Three rows on the printout correspond to one of the 16 rows on the video.) If Line 10600 does not send us to check for alphanumerics, we LPRINT P$. If we do the check for alphanumerics (11000-11600), a second string (Q$) is created with blanks and alphanumeric characters. When Q$ is complete, lines 11700-11900 merge P$ and Q$ into a new string R$. We then LPRINT R$.

This subroutine does an effective job of screen printing the contents of the video to a lineprinter. Please note that this and all previous routines are designed to work with TRS-80s which do NOT contain the Lower Case Modification.

Line Printer II Notes and Hints

We strongly recommend the Line Printer II (26-1154) for use with SCRIPSIT, our word processing programs for Model I. The Line Printer II is a dot matrix printer which produces excellent copies. The ability of the Line Printer II to handle both single sheets of paper and tractor forms, and its ability to print both upper and lower case characters makes it one of the most versatile printers in our product line.

The Line Printer II is an 80 character per line printer. Any line longer than 80 characters will "wrap around" to the next line. This means that the characters past 80 will be printed on the next line, rather than lost.

Some of our software, including the following, generates printouts of more than 80 characters.

26-1553 Inventory Control I
26-1559 Manufacturing Inventory Control
26-1603 Budget Management
All Model II Business Programs (Model II General Ledger WILL run on an 80 column printer, but we recommend 132)

For these programs we recommend a printer capable of 132 columns such as our Line Printer I (26-1152) and Line Printer III (26-1156). Model II users should be aware that almost all Model II software will require a 132 character printer. The following routines are written for Level II and Disk BASIC.

Mr. Bruce McLaren, Associate Professor at Indiana State University, sent us the following program for generating double width characters, line feeds and form feeds for use with Radio Shack's Line Printer II:

```
1 CLEAR 500:E$= CHR$(27)+CHR$(14)
2 LPRINT E$;"THESE ARE EXPANDED CHARACTERS"
3 R$=CHR$(27)+CHR$(15)
4 LPRINT E$;"BIG ONES";R$;"LITTLE ONES ON SAME
  LINE"
5 LF$=CHR$(138):FF$="":FOR I=1 TO
  12:FF$=FF$+LF$:NEXT I
6 LPRINT LF$;"THIS IS A SINGLE LINE FEED"
7 LPRINT FF$;"THIS WAS A FORM FEED"
```

What Mr. McLaren is doing is setting string variables equal to printer control characters. Lines 1 and 3 create string variables E$ and R$. E$ will give you expanded print and R$ will give you regular size print. With the Line Printer II you can print BOTH sizes in the same line! String variables LF$ and FF$ (line 5) provide easy ways to get line and form feeds. To vary the size of the form feed, simply change the values in the FOR-NEXT loop in line 5.

G. H. D. Moore of Jackson, Mississippi sent paper gauges for the Line Printer II which suggested this program to produce them:

```
10  CLEAR 2000:LPRINT STRING$(80,"!")
20  DEFINT A-Z
30  LPRINT "1";: FOR I=5 TO 35 STEP 5
50  LPRINT STRING$(I-2-PEEK(16539),32);STR$(I);
60  NEXT: LPRINTTAB(39)"X";
80  FOR I=45 TO 75 STEP 5: TB=80-I
100 LPRINT STRING$(I-2-PEEK(16539),32);TB;
110 NEXT: TB=77
130 LPRINT STRING$(TB-PEEK(16539),32);STR$(1)
140 LPRINT STRING$(80,"!"): LPRINT"1";
160 FOR I=5 TO 75 STEP 5
170 LPRINT STRING$(I-2-PEEK(16539),32);I;
180 NEXT:LPRINT STRING$(79-PEEK(16539),32);"8"
190 IF F=0 THEN LPRINT" " ELSE END
200 LPRINTSTRING$(80,"!")
210 F=1:GOTO140
```

And Dr. Angel Velez-Diaz sent the following simple "word processor" program for use with the Line Printer II:

```
10  CLEAR 80: INPUT A$: Y=LEN(A$)
20  FOR X= 1 TO Y
30  B=ASC(MID$(A$,X,1)): IF B<65 THEN A=B: LPRINT
    CHR$(A);: GOTO60
40  IF B<91 THEN A=B+32: LPRINT CHR$(A);: GOTO60
50  IF B<128 THEN A=B-32: LPRINT CHR$(A);
60  NEXT:GOTO10
```

Line 10 inputs an entire line to be sent to the printer. It also serves to print any information which is in the line printer buffer. You may have noticed that the three LPRINT statements are all followed by semicolons. The CLEAR statement in line 10 terminates the print line and dumps the buffer to the line printer. Lines 20-50 look at each character in the line you entered. If you entered alphabetic information, they "reverse" upper and lower case. This means that you use the shift key for upper case, otherwise you will have lower case printed. After your text has been printed, line 60 returns you to 10 for the next line. Dr. Velez-Diaz has used the CLEAR 80 statement to ensure that a line is never longer than the 80 character width of the Line Printer II. If you attempt to enter a line which is too long, you will get an OS ERROR (Out of String space).

Voice Synthesizer Driver Routine

For those of you using the Voice Synthesizer (26-1180), Bill Hogue of Van Nuys, California sent this DRIVER routine for Level II and Disk BASIC:

```
10 DATA 205, 127, 10, 70, 35, 94, 35, 86, 33, 255, 63, 78, 54,
   63, 54, 48, 120, 183, 40, 5, 26, 119, 19, 16, 251, 54, 48, 54,
   45, 54, 63, 113, 201
20 RESTORE:VO$=""
30 FOR X=1 TO 33
40 READ A
50 VO$=VO$+CHR$(A)
60 NEXTX
```

Set A$= desired phoneme string (WITHOUT opening and closing question marks) and call the appropriate subroutine:

For Disk BASIC:

```
1000 X%=VARPTR(VO$)
1010 XX=PEEK(X%+1)+PEEK(X%+2)*256
1020 IF XX > 32767 THEN DEFUSR1 = -1*(65536-XX)
     ELSE DEFUSR1= XX
1030 XX=USR1(VARPTR(A$))
1040 RETURN
```

For Level II BASIC:

```
1000 X%=VARPTR(VO$)
1010 POKE 16526, PEEK(X%+1)
1020 POKE 16527, PEEK(X%+2)
1030 XX=USR(VARPTR(A$))
1040 RETURN
```

The result of using this routine is that you will no longer "see" phonemes on the video display. This routine POKEs the information fast enough that the video is not disturbed. You can place graphic characters in the synthesizer "window" and they will not be affected. DO NOT put alphanumeric characters in the "window" as they may be read by the synthesizer.

To use the routine, be certain that your program does NOT use VO$ for any purpose outside these routines. Then simply enter your phonemes in variable A$ and GOSUB 1000. We think you will like the results.

Simple Word Processing Program

Mr. Dave Satterfield of Carson City, Nevada sent this program for simple word processing in Level II and Disk BASIC. The program allows you to set maximum print width and equal left and right margins. While you are entering text, the number of unused characters is displayed. If you reach the right margin, a flag will come on telling you that the margin has been reached. You can type past the margin to the line length you set. At any time you can backspace one character (left arrow) or press the '@' key to erase the entire line. This program reverses the keyboard, so you shift for upper case. Remember, you can send upper/lower case to your printer if your printer supports upper/lower case, but you will not see lower case on the video unless you have the conversion kit installed. An upper case lock (shift up arrow) is provided. Press up arrow to return to upper/lower case. Pressing the ENTER key will print your text on a line printer. This program was NOT written to be used with our upper/lower case conversion kit.

```
10  CLEAR 500
100 CLS:INPUT"MAX PRINTER LINE LENGTH";L
110 CLS:INPUT"LEFT/RIGHT MARGIN";M
120 CLS:PRINT"READY":FOR N=1 TO 200:NEXT: CLS
125 C=-1:S=-1:B$="":A$="":CLS
130 C=C+1:B$=B$+A$:PRINT@128,B$;CHR$(93);:
    PRINT@40,"SPACE LEFT";L-C-M;
133 IF C>=L-(2*M)PRINT@30,"MARGIN";ELSE PRINT@
    30,"      ";
135 IF C=L-M THEN 255
140 A$=INKEY$:IF A$="" THEN 140
160 IF A$="@"THEN 125
170 IF S=1 THEN 190
180 IF(ASC(A$)<91)*(ASC(A$)>63)THEN
    A$=CHR$(ASC(A$)+32): GOTO130
190 IF(ASC(A$)<128)*(ASC(A$)>95)THEN
    A$=CHR$(ASC(A$)-32): GOTO130
200 IF ASC(A$)=27PRINT@0,
    "SHIFT";:S=1:A$="":GOTO140
210 IF ASC(A$)=91PRINT@0,"      ";:
    S=-1:A$="":GOTO140
220 IF ASC(A$)=13THEN 300
240 IF ASC(A$)=8THEN
    C=C-2:Z=LEN(B$)-1:B$=LEFT$(B$,Z):
    A$="":GOTO130
250 GOTO130
255 PRINT@0,"END OF LINE. PRINT (P) OR ERASE (E)?"
260 P$=INKEY$:IF P$="" THEN 260
265 IF P$="P"THEN 300
270 IF P$="E"THEN 125
275 GOTO260
300 LPRINTTAB(M)B$:GOTO125
```

Model II PRINT@

The following program will print a conversion table for Model I PRINT@ positions to Model II positions. The Model II positions begin on the first line of the video and are centered.

```
1   DEFINT A-Z:CLS
5   PU$="####":DIM Q(1500)
10  FOR X=0 TO 1023
15  PRINT@200,X
20  Y=INT(X/64)
30  Z=Y*80
40  W=X-(64*Y)
50  Q(X)=Z+W+8
60  NEXT
70  FOR X=0 TO 1023 STEP 5
80  FOR Y=1 TO 5
100 LPRINTUSING PU$;X+Y-1;:LPRINT"->"
    ;:LPRINTUSINGPU$;Q(X+Y-1);: LPRINT"
110 NEXTY:LPRINT" ":NEXTX
```

Model I Accounts Receivable 26-1555

A word of explanation is needed to clarify what the Model I Accounts Receivable System is and is not.

It IS a BALANCE FORWARD system. In a Balance Forward system, each month when statements are sent, the system "forgets" the month's detail, and only retains a figure for the unpaid balance on each account. Obviously, without detail, true "Aging" cannot be done. So the system's aging report really is showing "Date of Last Activity."

To have a true aging system requires much more information to be stored on each account, which means many fewer accounts could be handled in the same disk storage space.

What this means is that any time a customer makes a minimum payment, his account is shown as current even though there may be an outstanding balance which has been due for over 30 days.

Machine Language Utility Routines

Mr. Don Taylor sent us a suggestion for relocating KBFIX into low memory. His reason was to eliminate the need to set memory size and avoid conflicts with other programs which might reside in high memory.

Use the information provided in the KBFIX manual and T-BUG to relocate KBFIX to memory BASE location of 407F. If you follow the instructions you should be able to PUNCH a system tape which will load into low memory.

Mr. Taylor does mention that the real-time clock will NOT fit into this same area, and that the relocated version cannot be used with Disk BASIC. Since Disk BASIC provides its own debounce routine, this should not be significant.

Mr. Taylor also provided the following machine language code for slowing down the scroll during the Level II LIST in a 16K machine:

```
7FF2  3A 80 38   LD A,(3880)   ;GET THE BYTE WITH THE
                                  SHIFT KEY
7FF5  1F         RRA           ;PUT LOW BIT INTO
                                  CARRY FLAG
7FF6  D0         RET NC        ;RETURN TO ROM IF NO
                                  SHIFT KEY
7FF7  C5         PUSH BC       ;SAVE B AND C
                                  REGISTERS
7FF8  01 00 20   LD BC ,2000   ;LOAD TIME DELAY
                                  VALUE
7FFB  CD 60 00   CALL 0060     ;CALL ROM DELAY
                                  SUBROUTINE
7FFE  C1         POP BC        ;RESTORE B AND C
                                  REGISTERS
7FFF  C9         RET           ;RETURN TO LISTING
```

In addition to this code, a PATCH is needed in low memory:

```
41DF  C3 F2 7F   JP 7FF2       ;JUMP TO TEST TIMER
```

To "simplify" things, Mr. Taylor provides the following information for POKEing this from BASIC:

Starting at 16863, going up, POKE the following decimal values: 195, 242 and 127. This is the low memory patch. For the routine itself, start at 32754 and going up, POKE the following values:

58, 128, 56, 31, 208, 197, 1, 0, 32, 205, 96, 0, 193, 201

If you do everything correctly, and have protected 14 bytes of memory at the top of your 16K, you should be able to slow down the LIST command by pressing the SHIFT key.

TRS-80™ CLASSROOM

The BASIC Language #2

Get your copy of the Level I BASIC course (26-2003) or Level II BASIC course Part I (26-2005). Turn your TRS-80 on and place the LESSON 1 tape into your cassette player. Make certain that all the cables are hooked up according to the instructions in the Level I User's Manual. Load this lesson according to the instructions provided with your computer.

When the tape has been loaded, the computer will display READY. Type RUN and press ENTER.

We will work by studying the information on the tape, then adding to, or supplementing, the information through this column.

The first section is the Table of Contents showing you the topics which we will cover during this course.

After you have blasted off, load the next portion of the tape according to the instructions provided.

VOCABULARY BREAK

While the next lesson is loading here are some words (Commands) which you will see quite frequently:

NEW — erases anything which may be in your computer's memory.

ENTER — The white ENTER key is used to tell the computer you have finished typing and it is time for the computer to do something. You must press ENTER after you have finished typing information or commands to the computer.

RUN — the command which tells the computer to begin executing (following the instructions) the BASIC program in memory.

This next lesson presents you information about BASIC and programming. In particular, you are given two steps in creating a program:

1. Writing a list of instructions
2. Executing that list

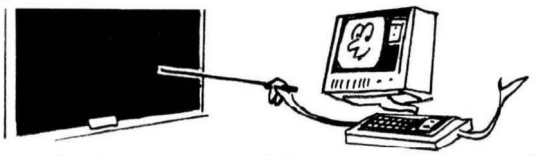
We would like to elaborate on the first of these. The process of "writing a list of instructions" requires some planning if you are to write those instructions with a minimum number of errors, and with a reasonable hope of them working:

Writing a list of instructions

1. What do you want the program to do?
2. What information will be available to put into the program?
3. What information will you want out of the program?
4. What are the general steps used to do this?
5. Write the program.
6. Test the program using information for which you already know the results.

Look at the first sample program in your cassette course.

1. What do we want the program to do?
   Find a person's approximate age in days.
2. What information will be available?
   Age in years.
3. What information will we want?
   Age in days.
4. What are the steps?
   Multiply age in years by 365 (number of days in most years).



This is a simple program, and the steps are not complex. It is quite possible that you would do all of the planning in your head. Fine. As your programs get more complicated, you will want to put them on paper with each step clearly defined.

What are the steps which were used to create the second program?

PROGRAM STATEMENTS

Look at line 10 of the second program. Notice that there are three parts to the line.

1. A line number
2. A statement (PRINT)
3. An argument ("ENTER TEMPERATURE IN DEGREES FAHRENHEIT")

These three parts make up a PROGRAM LINE. The last two make up a STATEMENT. For now we will work with single statements in each program line. Later we will look at lines with more than one statement in a line.

In line 20 of our program we have a new statement, INPUT. What is the purpose of the INPUT statement?

The INPUT statement is used when we want the user of a program to enter information into the program. When the computer comes to an INPUT statement, it prints a question mark and waits for the user to type something and press ENTER. As soon as the ENTER key is pressed, the computer examines the response. If it is valid, the computer ASSIGNS the response to the VARIABLE which follows the INPUT statement. The variable is the ARGUMENT of the INPUT statement. In this case, the variable is F. The value in F can then be used in the program.

Line 30 of our program shows something new about PRINT. If we use a semicolon, we can print more than one argument with a single PRINT statement. You saw this used in the Age in Days program also. The effect of a semicolon is to cause two arguments to be printed next to each other. To see the effect of the semicolon, try this:

PRINT"THIS";"IS ";"CLOSE";5;"THIS ";"HAS SPACE"

Notice that numbers have a leading and trailing blank. The leading blank is for the minus sign in negative numbers, the trailing blank is for clarity.

Use this same phrase, inserting commas instead of semicolons. How does this change the display? What is the difference between commas and semicolons? Can they be used together in the same line?

VOCABULARY BREAK

ARGUMENT — what a BASIC statement operates on, i.e. what will be PRINTed, etc.

INPUT — a BASIC statement which allows keyboard input of values. We have seen only numeric values, but alphanumeric (letters, special characters, numerals, etc.) values may also be INPUT.

STATEMENT — a BASIC keyword usually used inside a program which tells BASIC what to do.

VARIABLE — a program value which can change during the program.

TRS-80 Classroom (Cont.)

The BASIC Language #101

In November, in conjunction with the Level II BASIC course Part II (26-2006), we added further information concerning the EDIT subcommands I, H, and X. Frequently you will decide not to edit a line, or that what you have changed was right in the first place. If this happens before you save the changes, using either E or ENTER, you have the ability to restore the line to its original form.

The A subcommand cancels all changes, restoring the line to form it was in when this EDIT session started. This subcommand will leave you in EDIT mode.

The Q subcommand cancels all changes, just as the A subcommand does, but it returns you to COMMAND mode in BASIC rather than leaving you in EDIT.

Several other useful subcommands are available in EDIT. The first of these is D. The D subcommand Deletes characters from the line you are editing. If you want to delete a single character, simply move the cursor to the character you want deleted and press D. The deleted character will appear surrounded by exclamation marks (!). If you wish to delete more than one character, move the cursor to the first character, type the number of characters to delete and press D. We need to note that the L subcommand is used to List a line which is being edited.

Example:

10 PPPRINT"KNOW IS THE TIME IS THE TINE FOR ALL GOOD . . ."

We wish to EDIT line 10, DELETEing the extra P's and the extra 'IS THE TIME.'

EDIT 10
10 !P!!P! (PRESS D TWICE)
(PRESS L)
10 PRINT"KNOW IS THE TIME IS THE TINE FOR ALL GOOD . . ."
10 PRINT" (MOVE CURSOR TO 'K')
10 PRINT"!K!NOW !IS THE TIME ! (PRESS D THEN MOVE CURSOR TO 'I' AND PRESS 12D)
10 PRINT"!K!NOW !IS THE TIME !IS THE TI
(MOVE CURSOR TO 'N')
10 PRINT"!K!NOW !IS THE TIME !IS THE TI!N!M
(PRESS D, PRESS IM, PRESS SHIFT UP ARROW)
10 PRINT"!K!NOW !IS THE TIME !IS THE TI!N!ME FOR ALL GOOD . . ." (PRESS L)
10 PRINT "NOW IS THE TIME FOR ALL GOOD . . ."
10 (PRESS L AGAIN)

That was not too bad, but we had to move the cursor several times and that was kind of slow. Also we had to count the number of characters to be deleted, which slowed us down again. Press A to cancel the changes we just made and you should see:

10 !PP! (PRESS 2D)
10 !PP!PRINT" (PRESS SK)
10 !PP!PRINT"!K! (PRESS D)
10 !PP!PRINT"!K!NOW (PRESS SI)
10 !PP!PRINT"!K!NOW !IS THE TIME ! (PRESS 2KI)
10 !PP!PRINT"!K!NOW !IS THE TIME !IS THE TI
(PRESS SN)
10 !PP!PRINT"!K!NOW !IS THE TIME !IS THE TIM
(PRESS CM)
10 !PP!PRINT"!K!NOW !IS THE TIME !IS THE TIME FOR ALL GOOD . . ." (PRESS L)
10 PRINT "NOW IS THE TIME FOR ALL GOOD . . .!
(PRESS L AGAIN)

We Deleted two P's, Searched for the first K, Deleted it, Searched for the first I, Killed all characters up to (but not including) the second I, note that this was the second I past the cursor, Searched for the N, Changed it to an M and then Listed the line.

Derived Function List Correction

It has come to our attention that our list of derived functions in the Level II Manual (both editions) and in our Double Precision Subroutine Package (26-1704) contain some misprints. All of these lists were taken from the same source and have the same errors.

Please make note of the following corrections and additions to these functions:

The list of Derived Functions contains typographical errors in the following functions:

HYPERBOLIC COSINE: COSH(X) − (EXP(X) + EXP(−X)) / 2
HYPERBOLIC TANGENT: TANH(X) = −EXP(−X) / (EXP(X) +EXP(−X)) * 2 + 1
HYPERBOLIC COTANGENT: COTH(X) = EXP(−X) / (EXP(X)− EXP(−X)) * 2+ 1

In addition to the typographical errors, you should be aware of the appropriate range of values for which certain of these functions are valid:

INVERSE SINE	: $-1 < X < 1$
INVERSE COSINE	: $-1 < X < 1$
INVERSE SECANT	: $X < -1$ OR $X > 1$
INVERSE HYPER. COSINE	: $X > 1$
INVERSE HYPER. TANGENT	: $X * X < 1$
INVERSE HYPER. SECANT	: $0 < X < 1$
INVERSE HYPER. COSECANT	: $X <> 0$
INVERSE HYPER. COTANGENT	: $X * X > 1$

The following values are mathematically undefined but, due to round-off error and limited precision, you may get a value from these functions.

TANGENT OF 90 DEGREES AND 270 DEGREES
SECANT OF 90 DEGREES AND 270 DEGREES
COTANGENT OF 0 DEGREES AND 180 DEGREES
COSECANT OF 0 DEGREES AND 180 DEGREES

An example of this type error is:

TAN(1.5708) returns a value

TAN(90 * .01745329) returns a division by zero error indicating that no valid value exists.

1.5708 = 90 * .01745329 in single precision arithmetic, so we would have expected both of the above to have returned /0 errors.

Other values which you may want but which our functions will not provide are:

ARCSIN(−1) = − PI/2
ARCSIN(1) = PI/2
ARCCOS(−1) = PI
ARCCOS(1) = 0
ARCSEC(−1) = − PI
ARCSEC(1) − 0
ARCCSC(−1) = − PI/2
ARCCSC(1) = PI/2

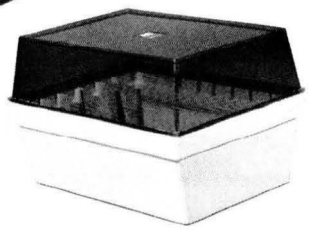
PI = 3.14159 26535 89793 2

Values and formulas derived or confirmed using CRC STANDARD MATH TABLES, 16th STUDENT EDITION.

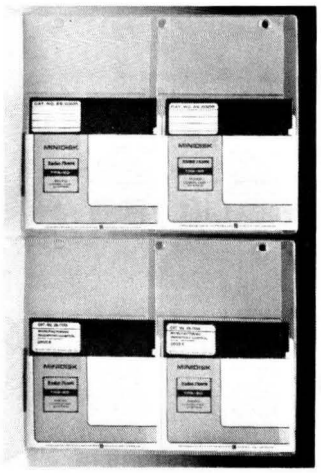
TRS-80 Accessory Selection Guide

Carrying Case Set

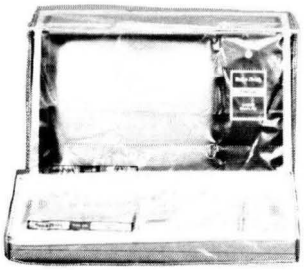
Large Cassette/Diskette Storage Box



System Desk

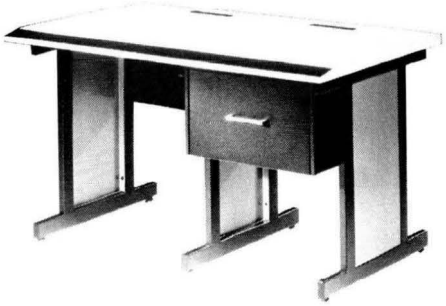


Diskette Sleeves

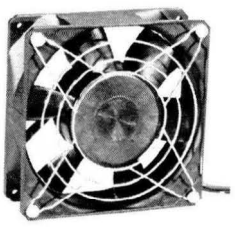


Dust Covers

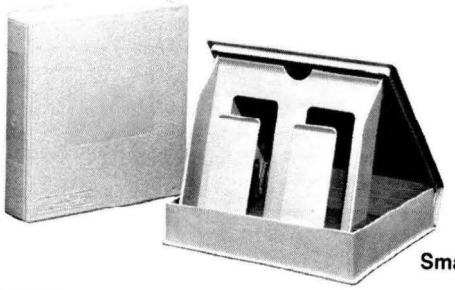
Space Saver Desk



Model II System Desk



Auxiliary Fan



Small Diskette Storage Box

Model I (Tape-Based Level I or II)

Accessory	Cat. No.	Each
C-20 Certified Cassettes	26-301	3.49
Carrying Case Set (2 pieces)	26-500	69.00
Dust Covers for Video, CPU and Cassette Recorder	26-501	7.95
System Desk	26-1301	199.00
Space Saver Desk	26-1304	49.95
Large Cassette Storage Box	26-1450	19.95

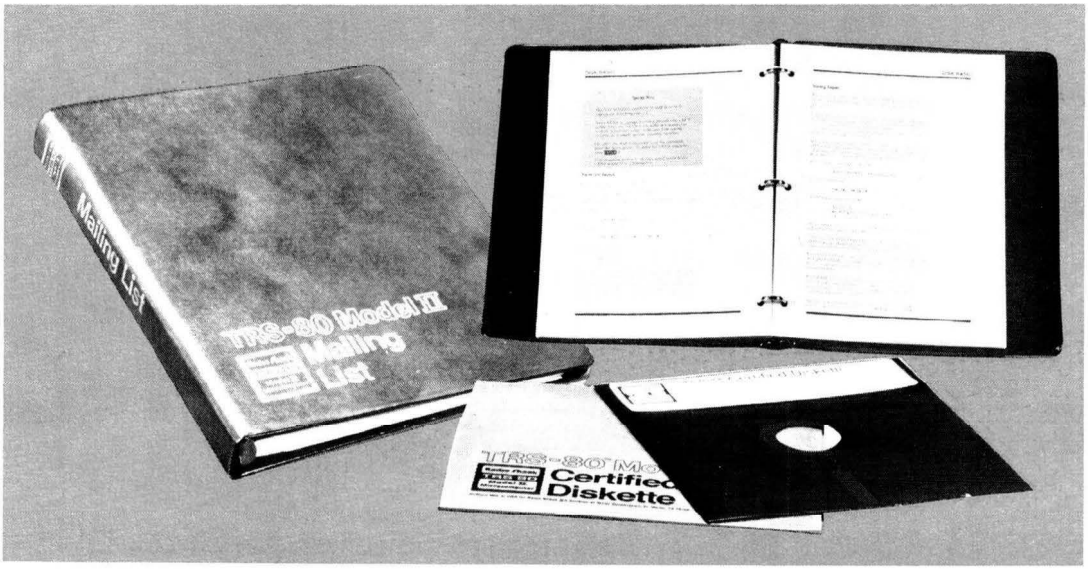
Model I (Disk-Based Level II)

Accessory	Cat. No.	Each
Single 5¼" Diskette	26-305	5.95
3-Pack of 5¼" Diskettes	26-405	16.95
Carrying Case Set for CPU, Video, Manuals and Diskettes	26-500	69.00
Dust Cover for Video, CPU and Cassette Recorder	26-501	7.95
Disk Drive Covers (Set of 2)	26-502	5.95
10 Plastic Diskette Sleeves	26-510	7.95
System Desk with Disk Bay	26-1301	199.00
Auxiliary Fan for System Desk	26-1303	29.00
Space Saver Desk	26-1304	49.95
Large Diskette Storage Box	26-1450	19.95
Small Diskette Storage Box	26-1452	3.95

Model II

Accessory	Cat. No.	Each
Model II System Desk	26-4301	350.00
Single 8" Diskette	26-4905	7.50
10-Pack of 8" Diskettes	26-4906	69.95

Mailing List Program For Model II Available Now



Description

The Model II Mailing List System (MLS) is designed to make the secretary's life much easier. This program can store up to 3000 names and addresses, available for update at any time. Each name may also be assigned up to eight special categories. Any number of names may be selected through the computer and printed for future use. Finally, the program will print the selected address labels.

Minimum Hardware Required

- 64K Single Disk TRS-80 Model II
- 132 column Printer (such as our Line Printer I or III) with cable.

Features

- Automatically puts records in alphabetical and Zip Code order.
- Rapid access to any name in the list.
- Easy error correction.
- Prints listings and mailing labels.
- Prints your own return address labels.
- Revise or update any information at any time.
- Expanded or Compressed Files:
  With compressed format you can store up to 3000 names.
  With expanded format you can store up to 2000 names.
- 5 different label sizes with as many as 5 labels across a page.

	Compressed	Expanded
First Name, Initial	Up to 9 char	Up to 16 char
Last or company name	Up to 14 char	Up to 18 char
Company or Telephone	Up to 17 char	Up to 20 char
Street Address	Up to 18 char	Up to 20 char
City	Up to 14 char	Up to 20 char
State	2 characters	2 characters
Zip Code or Country	Up to 9 char	Up to 9 char
Remarks	N/A	Up to 20 char

Mailing List. 26-4506 ..... ***$79.00***

Explore the Great Lost Pyramid! New PYRAMID 2000

An Adventure for 16K Level I and Level II Model I microcomputers.

You are standing before the Great Lost Pyramid. The seal of the entrance is still unbroken — perhaps the tomb is intact, untouched by the passage of time, impervious to the elements, still settled in quiet repose . . .

This is the beginning of your adventure. Simply load the machine language tape into your computer and your Astral image will be projected to the pyramid to follow your every command. You can command your image using simple verbs and nouns. What happens and what you encounter as you command your Astral image will be vividly described for you on your video display. Careful exploration can yield large treasures, but beware! The curse of the Tomb may still be effective!

Pyramid 2000.
26-1909 ..... ***$14.95***

At Last! Affordable WORD PROCESSING Made Possible by TRS-80™

NEW SCRIPSIT™ Word Processing Software for 16K Level II TRS-80s
#26-1563
$99.95 Disk*

EDIT, DELETE, MODIFY— then print it error-free, 45 characters per second!

NEW UPPER AND LOWER CASE KIT. Available for new or existing systems.
$99 Installed*
#26-1104

LINE PRINTER II
80 characters. Single sheets or tractor forms. Dot matrix. 100 CPS.
#26-1154 $999*

RADIO SHACK BRINGS YOU A COMPLETE WORD PROCESSING SYSTEM FOR TRS-80 MODEL I COMPUTERS.

Radio Shack smashes another computer "cost barrier" with the new TRS-80 Word Processing System. The system includes our new SCRIPSIT software, Upper/Lower Case Kit and Daisy Wheel Printer. Add it to any 16K Level II TRS-80, or buy a complete system. Once you've tried it, you may never want to use a typewriter again!

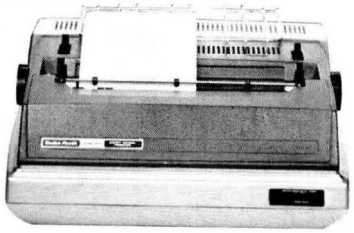
The new SCRIPSIT software lets you compose letters and documents of all types on TRS-80's screen in upper case, or upper and lower case with the new Upper/Lower Case Kit. You can move words or entire paragraphs, insert, delete and edit to your heart's content! SCRIPSIT gives you automatic page numbers, page headings and footnotes and makes it easy to indent paragraphs, change line widths, and center your text horizontally or vertically. Advanced features include justification, hyphenation, global search/replace, and variable screen width. On-going reports, form letters and text with print commands can be stored on TRS-80 cassettes or diskettes for use or revision at any time.

PRINT ALL OF THE "ORIGINALS" YOU NEED, FAST AND ERROR-FREE!

Our new WP-50 Daisy Wheel Printer is fast and gives you the same quality of the finest electric typewriters — carbon film ribbon and all! Or, if your job doesn't require "letter" quality, a TRS-80 system with a dot matrix, u/lc printer costs even less.

A complete TRS-80 cassette system with Word Processing Software, Upper/Lower Case Kit and a dot matrix printer is yours for just $2,046.95*. Or choose a really deluxe system with the WP-50 Printer and two floppy disks that store eight hours of 50 WPM typing for only $5,492.95*.

Sound exciting? You bet it is! Visit your nearest Radio Shack outlet or write for details.



NEW TRS-80 DAISY WHEEL PRINTER

Clean and readable printing — like the very finest electric typewriters! Write today for information. #26-1157, only $2999.*

Mail to: Radio Shack, Dept. MNA-001
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Fort Worth, Texas 76102

I'd Like to Know More!

☐ Send details on TRS-80 Word Processing and the 24-page TRS-80 Catalog #RSC-3.

☐ Have a representative contact me.

NAME _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

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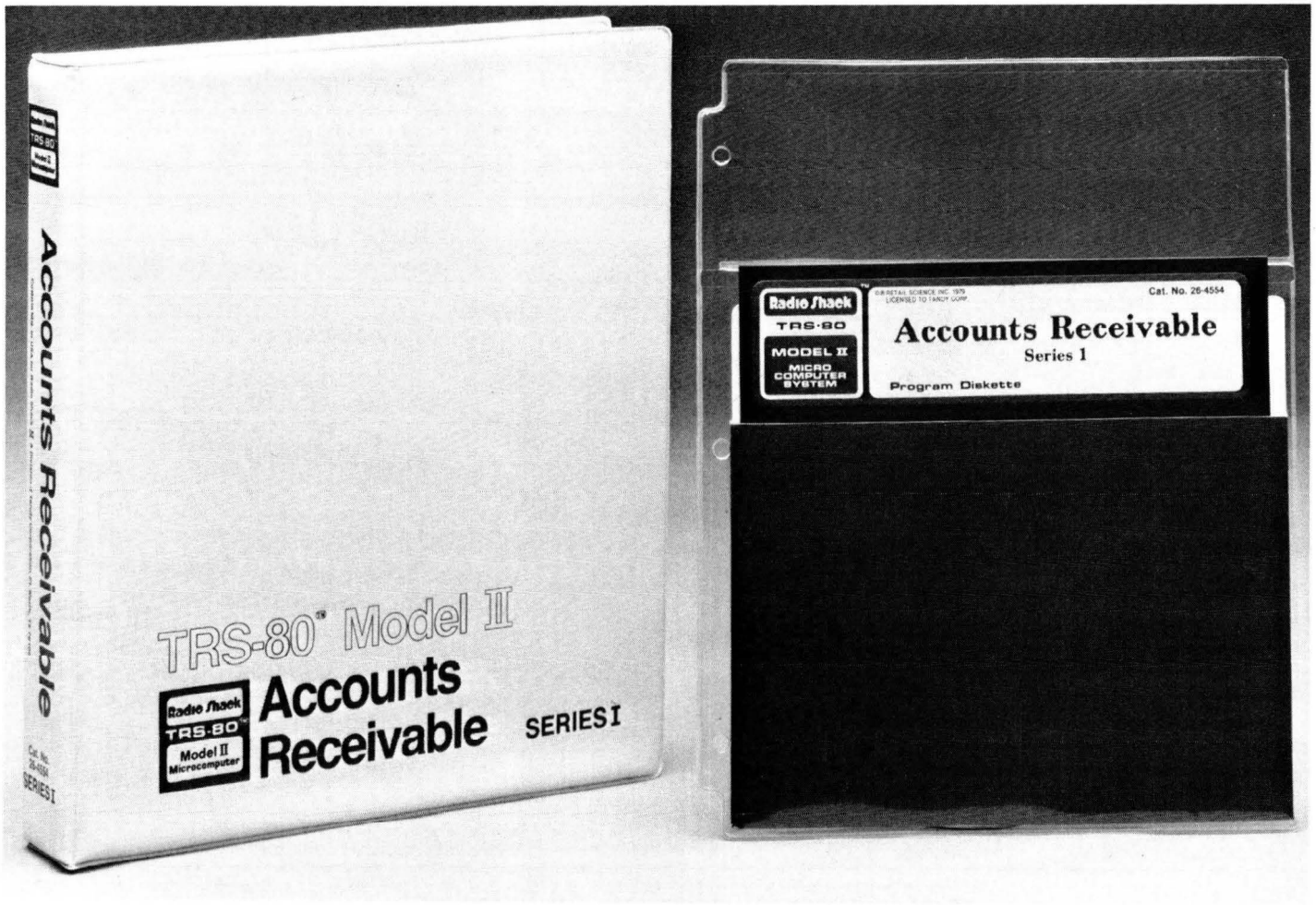
*RETAIL PRICES MAY VARY



A New Model II Accounts Receivable Program

Radio Shack's Accounts Receivable System Series I, for the Model II TRS-80, is a NEW, not previously announced, system.

The Radio Shack Series I Accounts Receivable System is a complete package providing such features as open-item or balance forward statements, the option to print a short message on statements, up-to-date customer information, aging reports, audit trails and more.

The system comes complete with program diskette, data diskette, and a complete instruction manual in a three-ring binder.

MINIMUM HARDWARE REQUIRED

- 64K Single Disk TRS-80 Model II Microcomputer
- 132 column printer like our Line Printer I or III
- Appropriate printer cable

DETAILED DESCRIPTION

The Series I Accounts Receivable System is capable of handling 1743 current records, counting each customer and each open transaction as a record. This means you could have 100 customers with a total of 1643 transactions open for all customers, or 500 customers with 1243 transactions, or any similar combination up to the system maximum of 800 customers.

This Accounts Receivable System contains programs which handle the following functions:

System Initialization
Customer File Maintenance
Customer Activity Query
Invoice Generation
Enter Transactions
Delete Transactions
Open Credit Reconciliation
Statement Generation
Aging Report Generation
Transaction Report Generation
Customer Account Report Generation
End-of-Period Processing
File Verification

In addition to the mentioned reports, the system also generates a Customer Account Detail Report, and the General Ledger Transaction Register that lists totals for all your General Ledger accounts:

Sales, Freight, Sales Tax, Service Charges, Misc. Debts, Payments, Credits, Returns, Discounts, Misc. Credits and Accounts Receivable.

This Radio Shack Model II Accounts Receivable System will provide you with the information which will help you speed receivable collections and take early action to deter potential losses.

The system is Menu-driven, which allows you to step from action to action without knowledge of the programs required to accomplish each action. In addition, the System contains self-correction features to ensure the accuracy of your information.

The Accounts Receivable System Series I is available for order now through your local Radio Shack store or dealer.

26-4554 . . . . . ***$199.00***

TRSDOS 2.2/2.3 Fact Sheet Clarification for Model I

It has come to our attention that we have released at least two different versions of the FACT SHEETS for TRSDOS 2.2 and TRSDOS 2.3 (The sheets look the same and are titled TRSDOS Version 2.2 and DISK BASIC Version 2.2) Five pages are affected by the changes. The following is provided to give everyone the same information.

Page 4 now contains the following additional paragraph:

Real-Time Clock

To improve the system's tolerance of disk drive performance variations, the clock interrupt procedure has been modified. As a result of this change, the clock will run slow during disk I/O. For intermittent disk access, the effect will usually be negligible.

A page 7.1 was added which states:

Both these TRSDOS commands (BASIC* and BASICR*) will use the highest 64 bytes in your TRS-80 System, regardless of whether you had reserved memory or not. So if you had a machine language routine up there, you'll have to reload it. However, the MEMORY SIZE will be correctly set when you return to BASIC — no need to re-set it.

Two "lines" are added to the discussion at the bottom of page 21, concerning changes needed to 26-1553 for it to operate under the new TRSDOS :

Eliminate the statement, POKE &H5C8C, from lines 3570 and 3580. Line 2750 should now include the following statements only:

```
3570 IFERR/2+1=68THENCLS:CLOSE:PRINT@458,"NO
     DISK IN DRIVE #1 — RUN TERMINATED":CLEAR50
     :PRINT:PRINT:END
```

Line 3580 should now include the following statements only:

```
3580 IFERR/2+1=70
     THENCLS:PRINT@465,"UNAUTHORIZED ACCESS
     TO INVENTORY SYSTEM"TAB(20)"RUN TERMI-
     NATED":PRINT:CLEAR50:END
```

In addition to the changes in these three pages, two pages 22 and 23 were added. Briefly, page 22 advises you to keep disk files Closed as much as possible. Open a file, access it, then Close it.

Page 23 gives a method for protecting high memory during TRSDOS commands BASIC, BASIC*, BASICR and BASICR*. Specifically, use the M subcommand of DEBUG to put a memory address into 4049 and 404A which is below your machine language programs. For a copy of these two pages, contact Computer Services (address and phone numbers on front page).

If you are inserting pages into your TRSDOS manual, number sheet 22 as 7-64.5 and 23 as 7-4.5.

Software Update Department

The following information is provided to give you the most recent information available on program errors or modifications. If you prefer not to make these corrections yourself, PLEASE contact your local Radio Shack Store or Dealer for assistance.

The store will then send the ORIGINAL program diskette (the one with our label) to Fort Worth for exchange. Please note: the diskette must come to Ft. Worth from a store or dealer; we will not accept diskettes directly for exchange. If you follow this procedure, make a BACKUP of the diskette so you can continue operating until the new program diskette arrives.

MODEL I DISK PAYROLL

Model I Disk Payroll (26-1556) will not allow changes to weeks worked on Workman's Compensation units through the Employee Maintenance program. (ADD/CHANGE EMPLOYEE option) Note: These figures CAN be changed through the record checks option.

To correct this, make the following change to:

Program: PR4ADD

Change line 3900 by ADDING the underlined instructions.

```
3900 FORI=Z1TOZ2:MID$(G$,I*8-7,8)=MKD$(E#(I-Z3)):
     NEXTI:LSETGG$=G$:PUT4,1+2*(N-1)+INT((Z-2)/
     2): LSETFF$=N$:PUT#3,N:GOTO810
```

Be sure to save the corrected copy of PR4ADD.

In addition, the W-2 program will misprint last names containing spaces. To correct this make the following modification to program "W2":

DELETE 5290-5293 and add the following lines:

```
5250 C$=MID$(N$,1,30):K=31
5251 K=K-1:IF MID$(C$,K,1)=" "THEN5251
5252 C$=MID$(C$,1,K)
5290 FORN=1TOK:AN=ASC(MID$(C$,N,1)):
     IFAN=44ORAN=59THEN A$=LEFT$(C$,N-1):
     B$=RIGHT$(C$,LEN(C$-N):ELSENEXT
5293 C$=B$+" "+A$
```

Be sure you save the corrected copy of "W2."

MODEL I MANUFACTURING INVENTORY

Model I Manufacturing Inventory (26-1559) has "bugs" in two of the print routines. Bill of Material and Pull Sheets will occasionally not print to completion because of a program error. This problem only occurs when the finished good contains more than 63 raw materials.

Change program "REPORT1." Changed or added information is underlined (_____).

```
1180 RC=1:FORX=1TORM/
     63+1:GET4,RC:RC=RC+1:IFRM<X*63THEN
     ZT=RM-(X-1)*63ELSEZT=63
```

Also change:

```
2170 RM%=CVI(FG$(X,3)):FORY=1TORM/
     63+1:GET4,RC:RC=RC+1:
     IFRM<Y*63THENZT=RM-(Y-1)*63ELSEZT=63
```

CSAVE Your Level II Programs Automatically

Tired of manually CSAVEing more than one copy of a program? Here is a Level II subroutine which will automatically CSAVE ten copies of your program to either tape recorder. Simply insert these program lines into a program which you want to save (renumbered if necessary) and use GOSUB 100 (or whatever you numbered it). In addition to saving your program, the program will PRINT the command line used to output the copies and insert a short (about one second) gap between each copy of the program. Our thanks to Patrick Eberhart, of Greensboro, North Carolina for this routine:

```
100 CLS
110 INPUT "WHICH RECORDER: 1 OR 2"; A
120 IF A<>1 AND A<>2 THEN PRINT "INVALID NUMBER:
    TRY AGAIN.": GOTO 110
130 FOR I=0 TO 9
140 A$= RIGHT$(STR$(I),1)
150 B$= "CSAVE#-" + RIGHT$(STR$(A),1) + "," +
    CHR$(34) + A$ + CHR$(34)
160 PRINT B$
170 CSAVE#-A, A$
180 OUT 255,4: FOR J= 1 TO 600: NEXTJ: OUT 255,16
190 NEXT I
200 RETURN
```

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Model II General Ledger

Model II General Ledger (26-4501), version 1.0 has three identified "bugs."

If you take advantage of our diskette exchange, multi-disk users, and those customers having access to multi-disk systems may COPY data files from the old diskette (after updating the old diskette to TRSDOS 1.2) to the new one. If you have a single disk system, you cannot transfer files because of the differences in TRSDOS 1.1 and TRSDOS 1.2. Instead, make the following changes to your GL 1.0 Program diskette (UNDERLINED MATERIAL (_____) IS NEW OR CHANGED):

A rounding problem may occur when adding or editing accounts and in current and year-to-date transactions. Change line 220 in both "Glmaint" and "Txentry" to read:

220 IN# = ABS(VAL(MID$(IN$,W,LEN(IN$) – W + 1))):
IN# = CDBL(WS) *FNRD#(IN#)

A NET SALES calculation error can occur if no COST OF SALES category is defined. Change line 1170 in the "Income" program to read:

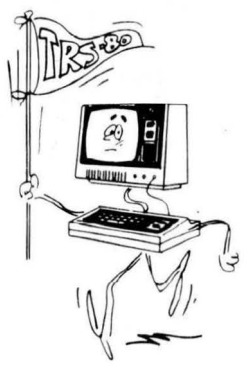
1170 SC# = Z#:SY# = Z#:FOR I = CA(1,0)
– 1TOCA(1,1) – 1:GET2,IX(I,1):IFVAL(Y$(3))<
>1THEN1190

A page overflow error may occur in the LEDGER DETAIL report if the last account on the page has no activity. Change the END of line 1140 in the "Txreport" program to:

1140 . . . :GOTO1210 instead of 1140 . . . :GOTO1220

If you have ANY questions on the above procedures, contact your local Radio Shack store or dealer.

When running setup on Model II General Ledger, the program asks for Year Start Date. The date expected is the Date your FISCAL year starts, NOT the current day's date.



Where Do We Stand?

In our AUG./SEPT. issue of the Newsletter, we gave you expected availability dates for eighteen new software packages for Model I, all expected to be available by the end of 1979. We did not make it! The following list includes the same packages and their current status:

26-1504 TAPE PAYROLL	— AVAILABLE NOW
26-1505 WORD PROCESSOR CASSETTE	— 03/01/80
26-1506 CASSETTE PORTFOLIO	— 04/01/80
26-1507 STANDARD AND POOR'S STOCKPAK™ AND PORTFOLIO MANAGEMENT SYSTEM	— 05/01/80
26-1554 ACCOUNTS PAYABLE	— 03/01/80
26-1555 ACCOUNTS RECEIVABLE	— AVAILABLE NOW
26-1557 CONCRETE TAKE-OFF	— 02/15/80
26-1558 BUSINESS MAILING LIST	— AVAILABLE NOW
26-1559 MANUFACTURING INVENTORY CONTROL	— AVAILABLE NOW
26-1560 FIXED ASSET ACCOUNTING	— 03/01/80
26-1561 TIME ACCOUNTING	— 03/01/80
26-1563 WORD PROCESSOR DISK	— AVAILABLE NOW
26-1574 REAL ESTATE VOLUME IV	— 03/01/80
26-1575 REAL ESTATE VOLUME V	— 04/01/80
26-1576 REAL ESTATE VOLUME VI	— 04/01/80
26-1706 I.Q. BUILDER	— AVAILABLE NOW
26-1713 TEACHER-AIDE	— AVAILABLE NOW
26-1806 CASINO GAME PACK	— AVAILABLE NOW

We did add three Model I software packages not on the list:

26-1909 PYRAMID 2000
26-2201 TRS-80 FORTRAN
26-2202 DISK EDITOR/ASSEMBLER

For Model II, the software situation looks like this:

26-4501 GENERAL LEDGER	— AVAILABLE NOW
26-4502 INVENTORY MANAGEMENT SYSTEM	— 02/01/80
26-4503 PAYROLL	— 05/01/80
26-4504 ACCOUNTS RECEIVABLE	— 05/01/80
26-4506 MAILING LIST	— AVAILABLE NOW

Please realize that the above dates are projections and not fixed in concrete. While we will do everything we can to meet or beat these dates, our main objective is to supply you with top quality software at reasonable prices.